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Section 1 - Personal Protective Equipment

Overview

The realignment in 2004 of this Personal Protective Equipment Section with its counterpart in the DHS Authorized Equipment List (AEL) was a significant milestone in its development. Part of that realignment which still provokes discussion in the responder community was the adoption by DHS of performance standards in lieu of the traditional OSHA Level A, B, C, D designations when specifying PPE. To assist DHS with this transition, the PP&OE SubGroup authored a short white paper that was published with the FY2005 DHS grant guidance.

Many agencies are still seeking guidance in the proper selection of PPE ensembles based upon the EPA/OSHA nomenclature of Levels A, B, C and D. Although these levels of protection are still in widespread use, they do not effectively differentiate based upon actual performance or protection. Therefore, the white paper has been updated and is included again in this edition (see below).

Comments on Changes to the AEL Personal Protective Equipment Section

[NOTE: This document was originally written to explain changes in the FY2005 AEL. It is still applicable, since the new strategy has continued in the FY2006 AEL. New editions of NFPA Standards 1994 and 1971 are due for release in August 2006, and this document will be revised at that time to reflect any relevant changes. Users of the AEL and SEL are encouraged to monitor the revision process for both of these critical standards. Information can be obtained at www.nfpa.org.]

Proper selection of Personal Protective Equipment (PPE) for individual responders must be based upon a careful assessment of two factors: 1) the hazards anticipated to be present at the scene and, 2) the probable impact of those hazards, based upon the mission role of the individual. Currently, no single personal protective ensemble can protect the wearer from exposure to all hazards. The FY2004 Grant Guidance on purchase of Personal Protective Equipment (PPE) used OSHA/EPA Levels A, B, and C to describe recommended personal protective ensembles. These levels are defined in the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), 29 CFR 1910.120, Appendix B, as follows:

- Level A – To be selected when the greatest level of skin, respiratory and eye protection is required.
- Level B – The highest level of respiratory protection is necessary but a lesser level of skin protection is needed.
- Level C – The concentration(s) and type(s) of airborne substances is known and the criteria for using air-purifying respirators are met.

While these definitions provide guidelines and a framework for discussing PPE, the descriptive narrative in these levels does not set minimum performance criteria required for specific threats, such as chemical permeation resistance and physical property characteristics. Thus the use of these general "levels" of protection does not describe the protective capability of such ensembles, and does not assure that the wearer is adequately protected from any specific hazards. Relying solely on these nomenclatures could result in exposure above acceptable exposure limits, or an unnecessary reduction in operational effectiveness through lack of mobility, decreased dexterity, or reduced operational mission duration.

In preparing the FY2005 (and subsequent FY2006) Grant Guidance, ODP[1] aligned the AEL with the Standardized Equipment List produced by the InterAgency Board for Equipment Standardization and Interoperability (IAB) to the maximum extent possible. The mission of the IAB includes support to the development of hazard-based protective clothing and equipment performance standards. This

includes performance standards for respiratory protective equipment, protective ensembles, garments, boots, and gloves for protection against chemical, biological, radiological and nuclear (CBRN) threats. Section 1 of the IAB's Standard Equipment List (SEL) defines the hazard environments for chemical, biological, radiological, thermal, explosive and ballistic threats. The IAB has also defined emergency responder mission roles in categories of law enforcement, fire department, emergency medical services, follow-on responders and special operations. The SEL provides a table that indicates the Federal or consensus-based equipment performance standards with which personal protective equipment should be compliant to assure appropriate protection against CBRNE hazards.

In accordance with Homeland Security Presidential Directive 8 (HSPD-8)[2], the FY2006 Grant Guidance defines eligible personal protective equipment in terms of nationally-recognized or U.S. Government standards. These standards require third-party certification, listing, and labeling of products; products may not claim compliance with them unless fully certified by an independent third party in accordance with the standard. For the NFPA standards, several commercial entities are able to provide the appropriate testing and certification. For the NIOSH respiratory protection standards, all testing and approval is provided by the NIOSH National Personal Protective Technology Laboratory (NPPTL). Several of these standards have already been officially adopted by the Department of Homeland security, including:

1) National Fire Protection Association (NFPA) 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents (Class 1, Class 2, or Class 3) for chemical and biological terrorism incidents. Note that certifications under NFPA 1994 are issued only to complete ensembles. Individual elements such as garments or boots are not considered certified unless used as part of a certified ensemble. Thus purchasers of PPE certified under NFPA 1994 should plan to purchase complete ensembles (or certified replacement components for existing ensembles).
2) NFPA 1991, Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies, including the now-mandatory requirements for CBRN protection for terrorism incident operations for all vapor-protective ensembles.[3]
3) NFPA 1951, Standard on Protective Ensemble for USAR Operations, for search and rescue or search and recovery operations where there is no exposure to chemical or biological warfare or terrorism agents, and where exposure to flame and heat is unlikely or nonexistent.
4) NFPA 1999, Standard on Protective Clothing for Emergency Medical Operations, for protection from blood and body fluid pathogens for persons providing treatment to victims after decontamination.
5) NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services.
6) NIOSH Chemical, Biological, Radiological and Nuclear (CBRN) Standard for Open-Circuit Self-Contained Breathing Apparatus.
7) NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Full Facepiece Air Purifying Respirator (APR).
8) NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Air-Purifying Escape Respirator and CBRN Self-Contained Escape Respirator.

[1] *The Office for Domestic Preparedness (ODP) was moved to the new DHS Preparedness Directorate in late 2005, and renamed the Office of Grants and Training (G&T).*

[2] *Paragraph 15 of HSPD-8 states "To the extent permitted by law, equipment purchased through Federal preparedness assistance for first responders shall conform to equipment standards in place at time of purchase. Other Federal departments and agencies that support the purchase of first responder equipment will coordinate their programs with the Department of Homeland Security and conform to the same standards."*

The following information is provided to assist emergency response organizations in transitioning from Levels A, B, and C to protection-based standards terminology. Because the OSHA/EPA Levels are expressed in more general terms than the standards and do not include testing to determine protection capability, it is not possible to "map" the Levels to specific standards. However, it is possible to look at specific configurations and infer their OSHA/EPA Level based on the definitions provided above. Some examples of ensembles and conservative interpretations of their corresponding levels are provided in the table below.

Ensemble Description Using Performance-Based Standard(s)	OSHA/EPA Level
NFPA 1991 worn with NIOSH CBRN SCBA	A[3]
NFPA 1994 Class 1 worn with NIOSH CBRN SCBA	A
NFPA 1994 Class 2 worn with NIOSH CBRN SCBA	B
NFPA 1994 Class 3 worn with NIOSH CBRN SCBA	B[3]
NFPA 1994 Class 2 worn with NIOSH CBRN APR	C
NFPA 1994 Class 3 worn with NIOSH CBRN APR	C

All purchasers of personal protective equipment are cautioned to examine their hazard and mission requirements closely, and select appropriate performance standards. All personal protective equipment must be employed in accordance with 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (or equivalent EPA/state regulations). 29 CFR 1910.134, "Respiratory Protection" (or an equivalent state regulation) is also applicable in states with OSHA-approved health and safety programs and for Federal employers. Both include requirements for formal plans, medical evaluation, and training to assure the safety and health of emergency responders. The G&T Fiscal Year 2006 Homeland Security Grant Program Guidance, the list of allowable equipment, and information on related standards, certifications, and products are available on the DHS-sponsored Responder Knowledge Base (http://www.rkb.mipt.org).

[3] *In the original version of this document (dated 12/02/04), the Class 3 ensemble with SCBA was rated as Level C. However, this rating was reconsidered by the PP&OE SubGroup on 03/03/05, and changed to Level B in recognition of its higher respiratory protection. The SubGroup also removed the reference to the Chem/Bio option of NFPA 1991, which has now become part of the basic standard.*

Personal Protective and Operational Equipment SubGroup
InterAgency Board for Equipment Standardization and Interoperability, (www.iab.gov)

The federal government, including the Occupational Safety & Health Administration (OSHA), the NIOSH National Personal Protection Technology Laboratory (NPPTL), EPA, and the NIST Office of Law Enforcement Standards (OLES) are still working to address this issue by redefining the protection levels to be consistent with the protection provided by such PPE. The IAB had hoped to see this effort completed in FY2005, and is still working diligently to support its earliest possible completion.

As stated in the document above, the Fiscal Year 2006 Homeland Security Grant Program Guidance, the list of allowable equipment, and information on related standards, certifications, and products are all available on the DHS-sponsored Responder Knowledge Base (http://www.rkb.mipt.org).

Changes for 2006

This edition of the SEL continues the practice of providing features, operating considerations, and standards information for as many items as possible. Much of the section is unchanged from the previous edition. However, in addition to minor edits in this section, the following changes may be of interest:

- Refinements to the features and operating considerations for respiratory protection items were provided by NIOSH to bring the information into closer alignment with the CBRN standards.

- CBRN SCBA Retrofit Kits were added to respiratory protection section to departments to upgrade existing SCBA. This change was also adopted by DHS to ensure that these upgrade were allowable using DHS grant funding.
- New items were added to the escape respirator category to reflect the new CBRN standard. A new air-purifying escape respirator with CO option, and a new self-contained escape respirator were added. These item are also now allowable under DHS grant funding.
- The listing and discussion of ensembles certified under NFPA 1994 has been streamlined, and consolidated into a single new category 01CB. Since all classes within NFPA 1994 are certified as complete ensembles, the SEL has eliminated individual references to garments, boots, and gloves for NFPA 1994 Classes 1, 2, and 3.

The Ensemble Selection Process

In order to select the appropriate PPE ensemble, a community must first complete a thorough threat assessment that at least identifies the most probable scenarios. Such scenarios should, at a minimum, address two major areas:

- What are the "Hazards" likely to be encountered, e.g. chemical (vapors, liquids, particulates), biological , radiological, explosive, etc.?
- What is the likely "Mission" (job function) of each responder during the event, and what is the type, level, and likelihood of exposure to potential hazards?

Although the tendency is to try to prepare for every eventuality, that approach is generally neither financially feasible nor appropriate. Thus the community should determine the most credible and likely threat "scenarios" as a basis for planning. This assessment can only occur through a coordinated communication and planning effort involving emergency response organizations, emergency planning officials, and the intelligence community.

This coordinated planning effort should produce an "inventory" of the most likely scenarios, as well as anticipated responder roles. The results can then be applied using the Hazard/Mission matrix described below. Completing this organized process of assessing the threat, planning the response, and identifying equipment gaps as a prerequisite to equipment selection is strongly encouraged.

Online Selection Factors

Like most sections in the 2006 SEL, the online[1] version of the Personal Protective Equipment Section uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose to use Hazard Environment and Mission Role as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users of the online version can choose any combination of Hazard Environment and Mission Role, and the system will provide a list of all items tagged for that combination.

The best way to visualize the interaction of the two selection factors (Hazard and Mission Role) for PPE is to view them as a matrix, as shown on the following page. The hazard or threat, including the likely physical state in which it would present itself, forms the "Hazard Environment" (horizontal) axis of the matrix. The vertical axis represents the likelihood of exposure based upon generalized job functions - the "Mission Role" axis of the matrix. Matching a mission role to one or more hazard environments gives a recommended set of equipment items. The values used in each of these two axes are described in detail below.

[1] *The on-line version is available on the Responder Knowledge Base, www.rkb.mipt.org.*

PPE Hazard/Mission Selection Matrix Template

		Hazard															
		Chemical							Biological		Radiological		Thermal		Explosive		Ballistic
		VH	VR	VL	LH	LL	PH	PL	BA	BL	AB	yX	FF	SF	PR	PO	AS
Mission Role																	
Law Enforcement	First Responder/Patrol Officer																
	Force Protection																
	Perimeter Control and Field Force																
	Evidence Technician																
	Tactical (SWAT)																
Fire Department	Fire Responder/Firefighter																
	Rescue Team																
	Decontamination Team																
Emergency Medical Services	First Responder/Medical First Receiver																
	Contaminated Patient Care																
	Non-Contaminated Patient Care																
Follow-On Responders	Administrative/Logistical Support Personnel																
	Technical and Skilled Specialty Personnel - Isolation Area																
	Technical and Skilled Specialty Personnel - Non-Isolation Area																
Special	Hazardous Device Operations																
	HAZMAT Operations																
	Incident Command Team																
	Urban Search and Rescue																
	Environmental/Occupational Health Operations																
	Epidemiology																
	Mortuary Operations																

The Hazard Environment Axis

This axis is based first on general weapon/hazard type, followed by an assessment of the physical state. For example, chemical weapons can exist as particulates, liquids or airborne vapors, gases or aerosols. Based upon credible intelligence and threat assessment information, a community might choose to select PPE designed to protect the responder from an event utilizing common toxic industrial materials in concentrations that are detrimental to the respiratory tract. In that case, the selection of "Chemical Weapon, Vapor/Gas/Aerosol in High Respiratory/Low Dermal concentrations" might be selected. In planning for potential RDD (radiological dispersion device) events, the selection of "Radiological with Penetrating Gamma/X-Ray" would be appropriate. Whatever selection is made will direct the user to the most up-to-date information concerning what, if any, protective ensembles are currently recommended, as well as usage limitations. The table below shows the hazard environment definitions adopted by the PPE Subgroup for use in the SEL:

HAZARD ENVIRONMENT DEFINITIONS

Category	Environment	Definition
Chemical	Vapor/Gas/Aerosol (High Respiratory, High Dermal) [VI]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. High Respiratory refers to the airborne concentration present and suggests that the concentration is above respiratory IDLH levels. High Dermal indicates a significant dermal contact or absorption risk for acute/chronic skin toxicity or systemic health effects via skin contact (e.g. carcinogens).
	Vapor/Gas/Aerosol (High Respiratory, Low Dermal) [VR]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. High Respiratory refers to the airborne concentration present and suggests that the concentration is above respiratory IDLH levels. Low Dermal indicates that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or chronic health effects via skin contact (e.g. carcinogens).
	Vapor/Gas/Aerosol (Low Respiratory, Low Dermal [VL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. Low Respiratory refers to situations where the airborne concentration is anticipated to be below IDLH levels. Low Dermal indicates that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or chronic health effects via skin contact (e.g. carcinogens).
	Liquids (High) [LH]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a liquid where the potential exists for contact with that liquid. High indicates conditions where extended contact in the form of splashes is expected.

HAZARD ENVIRONMENT DEFINITIONS - *Continued*

Category	Environment	Definition
Chemical - *Continued*	Liquids (Low) [LL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a liquid where the potential exists for contact with that liquid. Low indicates conditions where incidental contact could be expected from contaminated surfaces.
	Particulates (High) [PH]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as solid particles (particulate) or dust. High indicates that the concentration is above respiratory IDLH levels, or that the CBRNE agent is carcinogenic.
	Particulates (Low) [PL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as solid particles (particulate) or dust. Low indicates that the concentration is below respiratory IDLH levels, and that the CBRNE agent is non-carcinogenic.
Biological	Airborne [BA]	Microorganisms that can be spread as aerosols or particulates, and are considered airborne threats for respiration and in some cases also through dermal contact.
	Liquid-borne [BL]	Microorganisms that can be spread by contact with blood, body fluids, and other contaminated liquids.
Radiological	Particulate/Liquid (Alpha and Beta) [AB]	Alpha or beta ionizing radiation that is spread by particles suspended in air or liquids. The primary hazard from these materials is through inhalation of particulates; skin contact should also be avoided.
	Penetrating Gamma / X-Ray [yX]	The threat from gamma/x-ray ionizing radiation consists of both exposure to and contamination by gamma and x-ray-emitting radioactive isotopes. Other than time, distance, and shielding, PPE is limited to minimizing direct contact with or inhalation of contaminated material.
Thermal	Flash Fire [FF]	A relatively short duration fire of 10 seconds or less that involves the ignition and combustion of a flammable atmosphere.
	Sustained Fire [SF]	A fire involving a structure or other source of materials that continues for a period of 1 minute or more until extinguished or through the consumption of the combustible materials present.
Explosive	Pre-Detonation [PR]	The potential for explosion still exists at the emergency scene.
	Post-Detonation [PO]	The device has already exploded and the response scene involves the physical hazards associated with structural collapse and debris.

HAZARD ENVIRONMENT DEFINITIONS - *Continued*

Category	Environment	Definition
Ballistic	Armed Assaults, Force Protection, Hostage Rescue [AS]	Handgun and rifle fire up to and including .30 Caliber armor piercing rounds.

The Mission Role Axis

For a more detailed risk assessment of responders at CBRNE events, it is necessary to describe each responder's particular mission during the incident. By describing the mission, one can estimate numerous variables that place the individual at either an increased or decreased risk of actual exposure to the hazard. These variables include factors such as proximity to the potential release, potential exposure to IDLH environments, timing of arrival with regard to weapon dispersion, and probability of contact with potentially contaminated victims or surfaces. The mission roles listed in the matrix enable the community to consider a responder's job function during the CBRNE incident in comparison to the hazard. This results in a better matching of protective postures towards actual risk.

The fact that a mission role is listed in a particular duty area is not intended to imply that the role is not applicable to other duty areas. For example, rescue teams may be located in law enforcement, fire department, or emergency medical duty areas depending upon the performance expectations of the community and their Comprehensive Emergency Response Plan. In the interest of keeping the matrix to a manageable size, mission roles are not repeated in every possible duty area.

Additionally, the reader must bear in mind that the mission roles presented in the matrix are based upon their assigned mission after the event occurs. Therefore, those assigned to First Responder roles such as "Patrol Officer", "Firefighter" and "Medical First Receiver" will often be reclassified to another listed mission role once they become involved in the event (e.g. perimeter control, decontamination team, or contaminated patient care).

The table below shows the mission role definitions adopted by the PP&OE Subgroup for use in the SEL:

MISSION ROLE DEFINITIONS

Duty Areas	Mission Role	Definition
Law Enforcement	First Responder/ Patrol Officer	Initial response into possible CBRNE incident in law enforcement capacity. Responder would have risk of exposure during the first response and initial phase of the event. Any requirement to work within the hazardous environment beyond the initial recognition phase would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.
	Force Protection	Force protection at a CBRNE incident scene or at critical supporting infrastructure locations (e.g. medical, communications, logistical support, staging or command and control locations) and access control points for the purpose of ensuring the safety of operating personnel and assets.

MISSION ROLE DEFINITIONS - *Continued*

Duty Areas	Mission Role	Definition
Law Enforcement - *Continued*	Perimeter Control and Field Force	Scene control, credentialing, perimeter security, and crowd control.
	Evidence Technician	Sample and evidence collection in cold, warm, and hot zones. These technicians may be involved in a variety of investigative processes including criminal investigation and environmental sampling.
	Tactical (SWAT)	Entry into any zone for immediate tactical action, hostage rescue, or assault.
Fire Department	Fire Responder/ Firefighter	Initial response in fire service capacity. Responders would have risk of exposure during the initial stages of the event. Any requirement to work within the hazardous environment beyond the first response and initial recognition phase would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.
	Rescue Team	Response to incident for purpose of rescuing live non-ambulatory casualties.
	Decontamination Team	Decontamination of response personnel or victims.
Emergency Medical Services	First Responder/ Medical First Receiver	Initial response in medical services capacity; responding to a report of an incident or being the first medical person to receive or recognize casualties from a CBRNE event. Responders would have risk of exposure during the initial phases of the event. Any requirement to function in another capacity beyond the first response and initial recognition phase of the event would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.
	Contaminated Patient Care	The medical care provider or allied medical professional (e.g. medical examiner) at any location or level of response who is likely to provide care or service to patients or victims who are likely to pose a significant risk of secondary contamination or exposure. These medical personnel may also be involved in the decontamination process.
	Non-Contaminated Patient Care	The medical care provider or allied medical professional (e.g. medical examiner) at any location or level of response who is likely to provide care or service to patients or victims who do not pose a significant risk of secondary contamination or exposure. The determination of lack of significant risk may be based upon a wide variety of factors including, but not limited to, the proximal location of the patient/victim at the time of CBRNE release, the physical/chemical properties of

MISSION ROLE DEFINITIONS - *Continued*

Mission	Mission Role	Definition
Emergency Medical Services - *Continued*	Non-Contaminated Patient Care	the CBRNE, the use of detection equipment or the extent of decontamination already taken.
Follow-On Responders	Administrative/ Logistical Support Personnel	Those individuals that would follow-on in the response to assist with the administration and logistical support of the event. These individuals would not normally be subjected to potential exposure provided appropriate force protection and perimeter security measures are in place.
	Technical and Skilled Specialty Personnel - Isolation Area	Those trade personnel called upon to provide a focused specialty function. These functions would likely be carried out in the isolation area of the event and therefore, potential exposures to materials are likely.
	Technical and Skilled Specialty Personnel - Non-Isolation Area	Those trade personnel called upon to provide a focused specialty function. These individuals would not normally be subjected to potential exposure provided appropriate force protection and perimeter security measures are in place.
Special	Hazardous Device Operations	Response to incidents involving a hazardous explosive and/or dispersal device within the isolation area, for the purpose of identification, rendering safe, or removal of such device(s). For operations outside the isolation area, PPE requirements are determined by specific mission role.
	HAZMAT Operations	Response to incidents involving CBRNE or hazardous materials within the isolation area for the purpose of detection, sampling, identification, control, and/or remediation. For operations outside the isolation area, PPE requirements are determined by specific mission role.
	Incident Command Team	Response to incidents for purposes of assuming incident command in the field, including establishment and operation of a field incident command center.
	Urban Search and Rescue (US&R)	Response to events in the isolation area involving collapsed structures for the purpose of locating and rescuing trapped victims, or structural stabilization.
	Environmental/ Occupational Health Operations	Response to incidents involving CBRNE or hazardous materials in order to gather data/samples for the purpose of assessing human health risks to responders or the community. These activities generally occur at a secured scene after the completion of initial emergency response activities.
	Epidemiology	Conducting interviews and/or investigations for the purpose of gathering epidemiological information.

MISSION ROLE DEFINITIONS - *Continued*

Mission	Mission Role	Definition
Special - *Continued*	Mortuary Operations	DMORT (Disaster Mortuary Operational Response Team) or coroner/medical examiner, law enforcement, morticians. PPE requirements are determined by specific mission role, e.g. sampling, preservation, etc.

PPE Standards and Hazard Environments

In addition to the Hazard/Mission matrix, this edition of the SEL updates the table relating hazards to existing standards. The figure on the following page identifies recognized standards that apply to PPE used for protection from specific types of hazards encountered by responders during a CBRNE incident. Start with the left side of this chart to select the types of hazards that may be potentially encountered (the definitions are the same as those used in the Hazard axis of the Hazard/Mission matrix). Then look across the top of the chart to find the current nationally recognized standard(s) that address the selected hazards. NOTE: Significant changes are expected to key NFPA standards in August of 2006, including new editions of NFPA 1994 and NFPA 1971. Readers are encouraged to follow the progress of these changes using the NFPA web site (www.nfpa.org) and plan for the impact of these changes.

	Respiratory Protection					Personal Protective Clothing											
Exposure/Hazard	NIOSH CBRN-SCBA	NIOSH CBRN-APR[5]	NIOSH CBRN PAPR (not yet released)[5]	NIOSH CBRN Escape Respirator (SC) [8]	NIOSH CBRN Escape Respirator (AP) [8]	NFPA 1991	NFPA 1991 w/ Flash Fire Options	NFPA 1994 Class 1	NFPA 1994 Class 2	NFPA 1994 Class 3	NFPA 1992	NFPA 1951	NFPA 1999	DoD-Advanced Bomb Squad Performance Specification	NFPA 1971	NFPA 1976	NIJ Standard 101 - Ballistic Protection
Unknown Environment	✓			E		✓	✓	✓									
Chemical																	
Vapor/Gas/Aerosol (High Respiratory[1], High Dermal[3])	✓			E		✓	✓	✓									
Vapor/Gas/Aerosol (High Respiratory[1], Low Dermal[4])	✓			E		✓	✓	✓	✓								
Vapor/Gas/Aerosol (Low Respiratory[2], Low Dermal[4])	✓	✓	^	E	E	✓	✓	✓	✓								
Liquids (High)[6]	✓			E		✓	✓	✓	✓								
Liquids (Low)[6]	✓	✓	^	E	E	✓	✓	✓	✓	✓	•	•			•	•	
Particulates (High)	✓			E		✓	✓	✓	✓								
Particulates (Low)	✓	✓	^	E	E	✓	✓	✓	✓	✓	•	•	•		•	•	
Biological																	
Airborne	✓	✓	^	E	E	✓	✓	✓	✓								
Liquid-borne	✓	✓	^	E	E	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Radiological/Nuclear[7]																	
Particulate/Liquid (Alpha and Beta)	✓	✓	^	E	E	✓	✓	✓	✓	✓	•	•	•		•	•	
Penetrating Gamma/X-Ray																	
Thermal																	
Flash Fire	✓						✓					✓			✓	✓	
Sustained Fire															✓	✓	
Explosive																	
Pre-Detonation														✓			
Post-Detonation												✓			✓	✓	
Ballistic																	
Armed Assaults, Force Protecion, Hostage Rescue																	✓

Key to Matrix Values:

- ✓ Provides protection from the indicated CBRNE exposure.
- E Provides protection from the indicated CBRNE exposure for escape purposes only. Not intended for operations in the indicated hazard environment.
- ^ NIOSH PAPR CBRN requirements are still in development.
- • Does not provide specific protection from CBRN exposures, but does provide limited protection from collateral exposures such as TICs/TIMs once the CBRNE threat has been mitigated.

[1] "High Respiratory" indicates that airborne concentrations are anticipated to be at or above IDLH or respirator maximum use concentration levels.

[2] "Low Respiratory" indicates that airborne concentration is at or above published Short Term Exposure Limits (STEL) but less than IDLH or respirator maximum use concentration.

[3] "High Dermal" indicates a significant dermal contact or absorption risk for acute/chronic skin toxicity, sensitization, corrosiveness, or systemic health effects via skin contact (e.g. carcinogens).

[4] "Low Dermal" suggests that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or acute/chronic health effects via skin contact (e.g. carcinogens).

[5] Cartridges and canisters utilized for APRs and PAPRs may have significant life limitations in airborne particulate hazards of sufficient quantity to cause filter loading.

[6] With regard to liquid chemical hazards. Although expressed in this matrix in general terms, selection of respiratory levels of protection would be dependent volatility of the material and results of quantitative analysis of airborne concentrations.

[7] The specific hazard/exposure indicated is radiological. Nuclear hazard environments will also include thermal and explosive components if detonation occurs.

[8] CBRN Escape Respirators are grouped into two categories for this table: Air Purifying (AP) which includes respirators with and without the carbon monoxide (CO) option; and Self Contained (SC), which has its own air supply. Protections are limited to duration required for escape activity.

Summary

Section 1 of the SEL is intended to provide the best possible guidance in selecting personal protective equipment based upon the anticipated hazard environment(s) and the mission role of the wearer. However, no guidance can replace the fundamental requirement to examine a community's most likely exposure to various hazards and mission roles for its personnel prior to PPE selection.

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 01 - CBRN Self-Contained Breathing Apparatus (SCBA) and Supplied-Air Respirators (SAR)			
01AR-01-SCBA SCBA, CBRN	CBRN SCBA - Self-Contained Breathing Apparatus certified as compliant with NFPA 1981 and certified by NIOSH as compliant with the CBRN approval criteria. Worn with multiple ensemble configurations.	SCBA consists of a harness, air cylinder, first stage regulator, low pressure hose, second stage regulator, end-of-service-time indicator (EOSTI) and facepiece. SCBA are typically rated for 30, 45, and 60 minutes of usage time, but may be rated for other usage times in accordance with 42 CFR Part 84. Variations exist in harness design, types of cylinders, and facepieces. ---------- Worn in conjunction with Incident Commander guidance and NFPA-certified ensemble appropriate for threat. CBRN SCBA are intended for circumstances where the substance involved creates an immediate threat, is unidentified, of unknown concentration, oxygen deficient, or determined to be immediately dangerous to life and health (IDLH). Such situations would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the CBRN SCBA. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. Direct contact with CBRN agents requires proper handling of the SCBA after each use and between multiple entries during the same use. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the SCBA after decontamination. NOTE: SCBA should not be used beyond 6 hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. CBRN SCBA facepieces must be specifically fit tested for individual first responders in accordance with OSHA 29 CFR Part 1910.134. Other use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.134, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, care, and maintenance are covered in NFPA 1852, Standard on Selection, Care and Maintenance →	48, 50, 55, 58, 99, 102, 108

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 01 - CBRN Self-Contained Breathing Apparatus (SCBA) and Supplied-Air Respirators (SAR) - *Continued*			
		of Open-Circuit, Self-Contained Breathing Apparatus, 2002 Edition.	
01AR-01-SCBC Cylinders and Valve Assemblies, Spare, and Service/Repair Kits, SCBA	Spare SCBA Cylinders and valve assemblies, and service/repair kits for item 01AR-01-SCBA.	Types of kits vary with specific SCBA. --- Cylinders and service/care kits must be specific to SCBA being used. Individuals using these items must be trained by manufacturer or manufacturer's representative.	55, 58, 64, 108
01AR-01-SCBR Kit, Retrofit, CBRN SCBA	Retrofit kit for existing Self-Contained Breathing Apparatus to bring the unit into CBRN compliance. Kit must be certified as compliant with NFPA 1981 and certified by NIOSH as compliant with the CBRN approval criteria.	Will replace components as necessary for compliance. --- Check manufacturer's instructions carefully. Kit may require factory trained technician for installation. Same considerations as 01AR-01-SCBA	48, 50, 55, 58, 99, 102, 108
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR)			
01AR-02-APR Respirator, Air-Purifying, Full-Face, Tight-Fitting, Negative Pressure, CBRN	CBRN Air-Purifying Respirator (APR) (certified by NIOSH as compliant with the CBRN approval criteria).	NIOSH has established specific criteria for air-purifying respirators (APRs) with CBRN approval. These criteria include existing tests established in 42 CFR Part 84, supplemented by additional tests for specific performance against selected chemicals and agents and other areas of performance. The APR must be a full facepiece. Each manufacturer will offer facepieces in different materials and different designs. The NIOSH standard supports canister interoperability. The canister's NIOSH label is →	50, 55, 57

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR) - *Continued*			
		color-coded OD (olive drab) green with black font, and lists the type of agents against which the canister is rated. --- Worn in conjunction with Incident Commander guidance and NFPA-certified ensemble appropriate for threat. NIOSH has listed the following limitations for CBRN APR: 1 Not for use in atmospheres containing less than 19.5 percent oxygen. 2. Not for use in atmospheres immediately dangerous to life and health or where hazards have not been fully characterized. 3. When used at defined occupational exposure limits, the rated service time cannot be exceeded. Follow established canister change schedules or observe End of Service Life Indicators to ensure that canisters are replaced before breakthrough occurs. 4. Failure to properly use and maintain this product could result in injury or death. 5. Follow the manufacturer's User Instructions for changing canisters. 6. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 7. Use replacement parts in the configuration as specified by the applicable regulations and guidance. 8. Refer to User Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 9. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 10. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. Procedures for monitoring radiation exposure and full radiation protection must be followed. 11. If during use an unexpected hazard is encountered such as a secondary CBRN device, pockets of entrapped hazard or any unforeseen hazard, immediately leave the area for clean air. →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR) - *Continued*			
		12. Use in conjunction with personal protective ensembles that provide appropriate levels of protection against dermal hazard. Failure to do so may result in personal injury even when the respirator is properly fitted, used, and maintained. 13. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 14. Direct contact with CBRN agents requires proper handling of the respirator after each use and between multiple entries during the same use. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the respirator after decontamination. 15. The respirator should not be used beyond eight (8) hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. If liquid exposure is encountered, the respirator should not be used for more than two (2) hours.	
01AR-02-APRC Canister, CBRN, APR	Canisters for Item 01AR-02-APR	NIOSH CBRN-approved canisters provide protection against 139 gas, vapor, and particulate hazards including chemical warfare agents. The canister must incorporate a P100 filter capability and use a special mounting thread that permits interoperability with other manufacturer's respirators when no other cartridges are available. The canister's NIOSH label is color-coded OD (olive drab) green with black font, and lists the type of agents against which the canister is rated. NOTE: The interoperability capability is for emergency use only. --- NIOSH has listed the following limitations for CBRN APR: 1. Not for use in atmospheres containing less than 19.5 percent oxygen. 2. Not for use in atmospheres immediately dangerous to life and health or where hazards have not been fully characterized. 3. When used at defined occupational exposure limits, the rated service time cannot be exceeded. Follow established canister change schedules or observe End of Service Life Indicators to ensure that canisters are replaced before breakthrough occurs. →	55, 57

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR) - *Continued*			
		4. Failure to properly use and maintain this product could result in injury or death. 5. Follow the manufacturer's User Instructions for changing canisters. 6. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 7. Use replacement parts in the configuration as specified by the applicable regulations and guidance. 8. Refer to User Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 9. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 10. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. Procedures for monitoring radiation exposure and full radiation protection must be followed. 11. If during use an unexpected hazard is encountered such as a secondary CBRN device, pockets of entrapped hazard or any unforeseen hazard, immediately leave the area for clean air. 12. Use in conjunction with personal protective ensembles that provide appropriate levels of protection against dermal hazard. Failure to do so may result in personal injury even when the respirator is properly fitted, used, and maintained. 13. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 14. Direct contact with CBRN agents requires proper handling of the respirator after each use and between multiple entries during the same use. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the respirator after decontamination. 15. NOTE: The respirator should not be used beyond eight (8) hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. If liquid exposure is encountered, the respirator should not be used for more than two (2) hours.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 03 - Powered Air-Purifying Respirator (PAPR)			
01AR-03-PAPA Respirator, Powered, Air-Purifying (PAPR)	Powered Air-Purifying Respirator (PAPR) (certified by NIOSH as compliant with 42 CFR Part 84 and outfitted with a canister or cartridge appropriate to the response).	Powered air-purifying respirators (PAPRs) use a blower in combination with either a loose-fitting respirator inlet cover (such as a hood or helmet) or a tight-fitting facepiece. PAPRs may use different hood, helmet, and facepiece designs. Generally, the blower is belt mounted, but other mounting options are available. The PAPR may use single or multiple canisters or cartridges, and requires a power source. ---------- Worn in conjunction with Incident Commander guidance and NFPA-certified ensemble appropriate for threat. Powered air-purifying respirators (PAPR) cannot be used in environments classified as immediately dangerous to life and health (IDLH) and further cannot be used when the oxygen concentration in the environment is less than 19.5%. PAPRs must be fitted with the appropriate canister or cartridges, and should not be used in a flammable or potentially flammable environment. The length of canister or cartridge use time will depend on concentration of the hazardous substance, the temperature, relative humidity, and breathing (flow) rate through the canister or cartridge. Air-purifying respirator use is predicated on environmental monitoring in order to determine continued protection in accordance with OSHA 29 CFR Part 1910.134.	50, 55
01AR-03-PAPB Battery Pack, PAPR	Battery pack for item 01AR-03-PAPA.	Compact, integrated power source capable of all weather operations. ---------- Consider power requirements in addition to protections. Based upon mission requirements, a low battery indicator may be a desirable option. Follow manufacturer's instructions regarding battery type and use.	50, 55
01AR-03-PAPC Canister, PAPR	Canisters for Item 01AR-03-PAPR	Canisters are single filter/adsorbent elements used with a respirator; cartridges are dual filter/adsorbent elements. Canisters and cartridges are color-coded by the type of agents (chemicals) the canister or cartridge is rated against. Some canisters or cartridges may protect against multiple agents and chemicals. Some canisters and cartridges come with →	50, 55

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 03 - Powered Air-Purifying Respirator (PAPR) - *Continued*			
		prefilters for particulates. --- Each canister or cartridge must have a NIOSH approval number. Canisters and cartridges are specific to the manufacturer's respirator and may not be interchanged with other respirators. Canisters and cartridges have a limited service life, which depends on the concentration of the hazardous substance, the temperature, relative humidity, and breathing (flow) rate through the canister or cartridge. Air-purifying respirator use is predicated on environmental monitoring to determine continued protection in accordance with OSHA 29 CFR Part 1910.134.	
AR - Respiratory Protection Equipment 04 - CBRN Escape Respirator			
01AR-04-APEC Respirator, Escape, Air-Purifying, Single-Use, CBRN, with CO Option	CBRN air-purifying escape respirator (APER) designed for escape for hazardous environments, including carbon monoxide (certified by NIOSH as compliant with the CBRN approval criteria).	Quick donning, short duration respiratory protection with CBRN protection against chemicals, biological agents, and radiological particles FOR ESCAPE PURPOSES ONLY. Air-purifying respirators operate by filtering, and have no internal air supply. --- NIOSH has listed the following limitations: 1. Failure to properly use and maintain this product could result in injury or death. 2. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 3. Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 4. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 5. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. This respirator provides limited dermal protection to the head area and eyes. 6. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. →	55, 56

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 04 - CBRN Escape Respirator - *Continued*			
		7. Direct contact with CBRN agents requires proper handling of the respirator after use. Correct disposal procedures must be followed. These limitations are not all inclusive. The respirator manufacturer may also identify further cautions and limitations for their respirators. In addition, regulatory agencies may also place a limit on the use of respirators in their standards.	
01AR-04-APER Respirator, Escape, Air-Purifying, Single-Use, CBRN	CBRN air-purifying escape respirator (APER) designed for escape for hazardous environments (certified by NIOSH as compliant with the CBRN approval criteria).	Quick donning, short duration respiratory protection with CBRN protection against chemicals, biological agents, and radiological particles FOR ESCAPE PURPOSES ONLY. Air-purifying respirators operate by filtering, and have no internal air supply. --- NOTE: Not approved for escape from carbon monoxide (CO) or oxygen deficient (<19.5%) environments. NIOSH has listed the following limitations: 1. Failure to properly use and maintain this product could result in injury or death. 2. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 3. Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 4. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 5. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. This respirator provides limited dermal protection to the head area and eyes. 6. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 7. Direct contact with CBRN agents requires proper handling of the respirator after use. Correct disposal procedures must be followed. These limitations are not all inclusive. The respirator manufacturer may also identify →	55, 56

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 04 - CBRN Escape Respirator - *Continued*			
		further cautions and limitations for their respirators. In addition, regulatory agencies may also place a limit on the use of respirators in their standards.	
01AR-04-SCER Respirator, Escape, Self-Contained, Single-Use, CBRN	CBRN Self-contained escape respirator (SCER) designed for escape from hazardous and oxygen-deficient environments (certified by NIOSH as compliant with the CBRN approval criteria).	Quick donning, escape supplied-air respiratory protection designed for inhalation protection against chemical or biological agents and radiological (CBRN) particulates FOR ESCAPE PURPOSES ONLY. The SCER offers escape protection for atmospheres containing less than 19.5 percent oxygen, immediately dangerous to life and health (IDLH) conditions, flame effects, or when atmospheric hazards have not been fully characterized. --- Escape respirator durations are per NIOSH approval. Use conditions are in accordance with NIOSH cautions and limitations, and Incident Commander guidance. The CBRN SCER is designed as a hooded device. Storage/service use life does not exceed 5 years. NIOSH has listed the following limitations: 1. Failure to properly use and maintain this product could result in injury or death. 2. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 3. Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 4. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 5. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. This respirator provides limited dermal protection to the head area and eyes. 6. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 7. Direct contact with CBRN agents requires proper handling of the respirator after use. Correct disposal procedures must be followed. These limitations are not all inclusive. The respirator manufacturer may also identify →	55, 59

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 04 - CBRN Escape Respirator - *Continued*			
		further cautions and limitations for their respirators. In addition, regulatory agencies may also place a limit on the use of respirators in their standards.	
AR - Respiratory Protection Equipment 05 - Combination Respiratory Equipment			
01AR-05-COMB Equipment, Respiratory Protection, Combination	Respiratory protection equipment that performs in multiple modes corresponding to various respirator types, such as a combination of Self Contained Breathing Apparatus (SCBA) and Powered Air Purifying Respirator (PAPR). Must be certified by NIOSH as a compliant combination respirator in accordance with 42 CFR 84. Each mode of operation must comply with the applicable NIOSH CBRN approval criteria. If no CBRN standard is established for a given mode of operation (e.g., PAPR), the equipment must be certified in that mode under 42 CFR 84. Appropriate Cautions and Limit- →	Combination equipment combines the advantages of multiple operational modes. For example, an SCBA/PAPR combination allows the user to extend mission time by utilizing the PAPR while ambient air is within tolerances, and switching to SCBA mode when ambient oxygen is not sufficient. --- Worn in conjunction with Incident Commander guidance and an NFPA-certified ensemble appropriate for threat. It is important to note that when these devices are used, only one mode is used at a time. From a user standpoint, when a combination respirator with SCBA capability is used in that mode, it should provide all of the protections and functions expected of an SCBA, including CBRN protection. For some threat environments, only one mode may be appropriate for the exposure conditions (e.g., use of a SCBA/PAPR only in SCBA mode when Immediately Dangerous to Life and Health (IDLH) conditions exist). The capability of operation in alternative modes does not lessen the individual protection requirements in each mode.	48, 50, 55, 57, 58, 99, 102, 108

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 05 - Combination Respiratory Equipment - *Continued*			
	ations of Use apply for each respirator type/mode of operation.		
AR - Respiratory Protection Equipment 06 - Support Equipment			
01AR-06-FTST Tester, Mask Leak/Fit	A device used for performing fit testing of respirator facepieces to determine quality of face to mask seal.	Fit testing equipment for respirator masks may be either qualitative or quantitative. Qualitative equipment involves the use of a test agent, with the wearer determining whether the substance can be detected once the respirator is donned. Quantitative fit testing devices can use one of two methodologies: the negative pressure device measures the infiltration of air into a facepiece; particulate or ambient aerosol devices use the measurement of particulate or ambient aerosol leakage inside the wearer's breathing zone for determining the protection factor provided by the specific mask on the individual being tested. A protection factor is the ratio of contaminant concentration in the outside environment to contaminant concentration in the breathing zone. --- The selected mask leak/fit tester should accommodate the types of respirator facemasks used. The tester should be used by a trained individual. Fit testing should be in accordance with OSHA Title 29 Code of Federal Regulations Part 1910.134.	50
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 01 - NFPA 1994 Class 1 Ensembles			
01CB-01-ENSM Ensemble, Chemical/ Biological Protective, NFPA 1994 Class 1	NFPA 1994 Class 1 Chemical/Biological Terrorism Protective Ensemble, including totally encapsulating suit	Ensemble consists of suit that encapsulates wearer and wearer's breathing apparatus, combined with attached gloves, and boots or booties with outer boots. Ensembles include transparent visors, pressure-sealing zippers, and exhaust valves for release of wearer's respirator exhalation air. Ensemble is designed to be worn with CBRN self-contained breathing apparatus (CBRN SCBA). The position of the closure system will vary with the manu- →	48, 49, 99, 114

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 01 - NFPA 1994 Class 1 Ensembles - *Continued*			
	with attached gloves, and footwear or booties with outer boots (certified as compliant with NFPA 1994). NFPA 1994 Class 1 certifications specify the suit, glove system, boots, and respiratory protection components by make/model -- using any component other than those specified invalidates the certification. This item should be purchased and used as a complete ensemble.	facturer. The overall suit is evaluated for gas-tight integrity and inward leakage (0.02% is permitted). Materials are evaluated for permeation resistance against high levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. ---------- NOTE: The next edition of NFPA 1994 is due to be issued in July 2006. The new edition will transfer existing 1994 Class 1 ensembles to NFPA 1991, where the requirements already exist. Purchase of ensembles certified as compliant with current NFPA 1994 Class 1 requirements will be discontinued six months after the effective date of the new edition. Class 1 ensembles are intended for circumstances where the substance involved creates an immediate threat, is unidentified and of unknown concentration. Such situations would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the SCBA. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01CB-01-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01CB-01-ENSM.	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. ---------- Inflation testing equipment should work with the selected NFPA 1994 Class 1 ensemble.	79
01CB-01-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01CB-01-ENSM.	Encapsulating suit that is constructed in similar manner as NFPA 1994, Class 1 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 1 ensemble. ---------- →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 01 - NFPA 1994 Class 1 Ensembles - *Continued*			
		Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 02 - NFPA 1994 Class 2 Ensembles			
01CB-02-ENSM Ensemble, Chemical/ Biological Protective, NFPA 1994 Class 2	NFPA 1994 Class 2 Chemical/Biological Terrorism Protective Ensemble, including suit with attached gloves and footwear or booties with outer boots (certified as compliant with NFPA 1994). NFPA 1994 Class 2 certifications specify the suit, glove system, boots, and respiratory protection components by make/model -- using any component other than those specified invalidates the certification. This item should be purchased and used as a complete ensemble.	Ensemble consists of an encapsulating suit, which may or may not be gas-tight, gloves, and footwear. The ensemble may be designed with the SCBA inside or outside of the ensemble. The ensemble is designed to minimize the inward leakage of gases or vapors as demonstrated by a specific test (leakage of no more than 2% is permitted). Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at low concentrations; materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to the vapor protective requirements of NFPA 1991. Ensembles are tested for functionality. ---------- NOTE: The next edition of NFPA 1994 is due to be issued in July 2006. The new edition will modify the requirements for Class 2 ensembles. Purchase of ensembles certified as compliant with current NFPA 1994 Class 2 requirements will be discontinued six months after the effective date of the new edition. Class 2 ensembles are intended for circumstances where the agent or threat may be identified, when the actual release has subsided, or in an area where live victims may be rescued. Conditions of exposure include possible contact with residual vapor or gas and highly contaminated surfaces at the emergency scene. Most victims in the response area are alive and show signs of movement, but are non-ambulatory. For Class 2 ensembles, breathing air from the SCBA may still limit wearing time. However, Class 2 ensembles may also currently be configured with powered air-purifying respirators that provide longer duration response time. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	48, 49, 99, 115

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 02 - NFPA 1994 Class 2 Ensembles - *Continued*			
01CB-02-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01CB-02-ENSM.	Encapsulating or non-encapsulating suit that is constructed in similar manner as NFPA 1994, Class 2 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 2 ensemble. ---------- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 03 - NFPA 1994 Class 3 Ensembles			
01CB-03-ENSM Ensemble, Chemical/ Biological Protective, NFPA 1994 Class 3	NFPA 1994 Class 3 Chemical/Biological Terrorism Protective Ensemble, including suit or garment with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1994). NFPA 1994 Class 3 certifications specify the garment, glove system, boots, and respiratory protection components by make/model -- using any component other than those specified invalidates the certification. This item should be purchased and used as a complete	Ensemble consists of full body one- or multi-piece suit, gloves, and footwear. The ensemble may be designed for use with SCBA or APR, though APR is consistent with the use of this ensemble. The ensemble is designed to minimize the inward leakage of liquids only by use of a liquid-tight integrity test. The suit and component parts do not offer protection from gases, vapors, or aerosols. Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at very low concentrations; materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to Class 2. Ensembles are tested for functionality. ---------- NOTE: The next edition of NFPA 1994 is due to be issued in July 2006. The new edition will modify the requirements for Class 3 ensembles. Purchase of ensembles certified as compliant with current NFPA 1994 Class 3 requirements will be discontinued six months after the effective date of the new edition. Class 3 ensembles are intended for use long after the release has occurred, at relatively large distances from the point of release, or in the peripheral zone of the release scene for such functions as decontamination, patient care, crowd control, perimeter control, traffic control, and clean-up. Class 3 ensembles should only be used when there is very little potential for vapor or gas exposure, when exposure to liquids is expected to be incidental through contact with contaminated surfaces, and when dealing with patients or self-evacuating victims. →	48, 49, 99, 116

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
CB - NFPA 1994 Chemical/Biological Terrorism Protective Ensembles 03 - NFPA 1994 Class 3 Ensembles - *Continued*			
	ensemble.	Class 3 ensembles must cover the individual and it is preferred that this clothing also cover the wearer's respirator to limit its potential for contamination. Because these ensembles are intended for longer wearing periods, the use of air-purifying respirators with these suits is likely. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01CB-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01CB-03-ENSM.	Non-encapsulating suit that is constructed in a manner similar to a NFPA 1994, Class 3 suit. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 3 ensemble. --- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items			
01EM-01-EYEP Eye/Face Protection Devices, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical eye and face protection devices (certified as compliant with NFPA 1999).	Eye and face protection devices can include splash-resistant eyewear such as faceshields or goggles, hooded visors, and masks. Only a few requirements exist for emergency medical face protection devices. These include permitting the wearer to pass a visual acuity test while wearing the device, passing a simulated spray test, and utilizing materials that do not allow viral penetration. --- The selected eye and face protection device should provide protection to the face from direct impingement of blood or body fluids, or subsequent runoff. A combination of eye and face protection devices may be used to meet this level of protection. Eye and face protection devices are not respirators and will not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	47, 49, 99, 100, 118

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
01EM-01-FTWC Footwear Covers, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective footwear covers (certified as compliant with NFPA 1999).	Footwear covers are rubber, textile, or plastic-based materials that are shaped into a cover that can be worn over boots. Footwear covers are intended to provide additional protection from contamination and, consequently, are disposable after use. Footwear covers compliant with NFPA 1999 meet all barrier requirements of NFPA 1999-compliant footwear, but rely on physical protection from inner footwear (such as impact and puncture protection). --- Footwear covers should not interfere with ensemble wearing. The wear surface of the footwear cover should provide some level of traction to prevent slipping. The footwear cover design should not allow penetration of liquids in through the top of the cover. Consequently, the footwear cover should be worn on the ensemble in a fashion that will prevent any liquid entry at the top. NFPA 1999-compliant footwear covers may not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	47, 49, 99, 100, 118
01EM-01-FTWR Footwear, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective footwear (certified as compliant with NFPA 1999).	NFPA 1999 footwear is likely to be leather footwear that incorporates a barrier as part of the lining system. The barrier layer must provide protection against bloodborne pathogens as demonstrated through a viral penetration resistance test. Footwear must be a minimum of 4 inches high (covering the ankle) and must have minimal toe impact protection and other physical protection features including cut and puncture resistance. --- NFPA 1999 footwear should be used whenever the potential for blood or body fluid contact exists. The interface between the footwear and the bottom of the pants or coverall should provide resistance to inward leakage of liquids. NFPA 1999-compliant footwear may not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	47, 49, 99, 100, 118

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
01EM-01-GARM Garment, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective garment (certified as compliant with NFPA 1999)	Under NFPA 1999, garments may be either full body outfits such as coveralls or jacket/pants combinations, or partial body clothing such as smocks, aprons, or sleeve protectors. In either case, the area of the body covered by the garment must afford complete barrier protection. For example, a garment with barrier panels built into the front of the garment, but with non-barrier materials in the back, would be considered unacceptable per NFPA 1999. The standard stipulates that the garments may be either single-use or reusable; however, single-use garments must be labeled "For Single Use Only." The barrier layer must provide protection against bloodborne pathogens as demonstrated through a viral penetration resistance test. The overall garment composite must also be breathable for improved wearer comfort. ---------- NFPA 1999 garments should be used whenever the potential for blood or body fluid contact exists. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	47, 49, 99, 100, 118
01EM-01-GLCL Gloves, Emergency Medical, Cleaning, NFPA 1999	NFPA 1999 emergency medical cleaning gloves (certified as compliant with NFPA 1999).	Cleaning gloves are relatively thick rubber gloves intended to protect responders' hands from potentially contaminated blood and body fluids with a relatively higher level of physical protection compared to standard examination gloves used in most emergency medical operations. Cleaning gloves must also resist permeation from common disinfectants. Cleaning gloves are likely to be constructed of natural rubber, nitrile rubber, or Neoprene. Glove length, cuff design, and grip finishes will vary with different manufacturer products. ---------- Cleaning gloves should not be lined as the linings may absorb hazardous liquids. Cleaning gloves will not provide protection against all "sharps" or other physical hazards commonly encountered in cleaning following an emergency medical operation. Some wearers may be subject to natural rubber latex allergies and should use synthetic gloves instead. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; →	47, 49, 99, 100, 118

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
		NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	
01EM-01-GLMP Gloves, Emergency Medical, Protective, NFPA 1999	NFPA 1999 emergency medical protective gloves (certified as compliant with NFPA 1999).	NFPA 1999-compliant gloves are standard medical examination gloves that have met specific design and performance criteria established in NFPA 1999. Many standard medical examination gloves fail to meet the more rigorous barrier and physical strength criteria established in NFPA 1999. Most gloves are constructed from natural rubber or nitrile rubber, although some additional polymers are available. These gloves are designed to provide intimate fit on the hand and allow fine dexterity and a high degree of tactility. ---------- NFPA 1999 gloves should be used in all emergency medical operations unless response conditions dictate the use of cleaning gloves, work gloves, or other gloves with additional protection. NFPA 1999 gloves should be selected that afford the highest degree of tactility while still affording adequate protection. Some wearers may be subject to natural rubber latex allergies and should use synthetic gloves instead. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	47, 49, 99, 100, 118
01EM-01-GLMW Gloves, Emergency Medical, Work, NFPA 1999	NFPA 1999 emergency medical work gloves (certified as compliant with NFPA 1999).	NFPA 1999-compliant work gloves combine a rugged shell (leather or synthetic fabric) with a lining that includes a barrier layer. The shell fabric provides resistance to physical hazards such as cutting, punctures, and abrasion. The barrier layer provides resistance to penetration by bloodborne pathogens as demonstrated in a viral penetration resistance test. ---------- Work gloves trade off dexterity and tactility for ruggedness. NFPA 1999-compliant work gloves are intended for emergency medical operations involving significant physical hazards where a high level of dexterity and tactility are not needed. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on →	47, 49, 99, 100, 118

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
		Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	
LE - Tactical Law Enforcement Protective Equipment 01 - Ballistic Protection			
01LE-01-ARMR Armor, Body	Personal body armor intended to protect the torso and extremities against small arms fire. This type of personal protective equipment is recommended for personnel entering into any zone for immediate tactical operations.	Protection up to .30 caliber/7.62mm threat rounds, to include armor piercing. --- Refer to NIJ Guide 100-01, Selection and Application Guide to Personal Body Armor for appropriate selection and use of body armor. 100% protection from ballistic threats in all circumstances is impossible. Body armor selection is, to some extent, a tradeoff between ballistic protection and wearability. The selection of appropriate threat levels is important to ensure that wearers have an adequate level of ballistic threat protection for the environment in which they operate. The NIJ standard identifies protection classifications as Type I, IIA, II, IIIA, III and IV. These protection classifications cover threats from hand guns to rifles, including armor piercing rounds. Manufacturer instructions related to the care of the outer shell vest (carrier) must be followed.	123, 124
01LE-01-HLMT Helmet, Ballistic	Ballistic helmet intended to protect the wearer against small arms fire and fragmentation threats during tactical operations.	Ballistic helmets covered in this standard are classified into three levels of protective performance. Consider ability to attach visors and/or neck protection. Should accommodate full face respirator or SCBA facepieces, night vision devices, and communications equipment. --- Helmets should be inspected for dents, cracks, crazing, chipped or sharp corners, and other evidence of inferior workmanship before and after use. Requirements for face shields are not included in NIJ Standard 0106.01. Riot Helmets and Face Shield performance requirements are covered in NIJ Standard 0104.02.	125, 126

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
LE - Tactical Law Enforcement Protective Equipment 01 - Ballistic Protection - *Continued*			
01LE-01-SHLD Shield, Ballistic	Ballistic shield intended to protect personnel against small arms fire and fragmentation threats while conducting tactical operations.	Ballistic performance to threat level III-A Ambidextrous handle	127
LE - Tactical Law Enforcement Protective Equipment 02 - Other Items			
01LE-02-BDUS Specialized Clothing, NFPA 1975 or NFPA 2112	Battle Dress Uniforms (BDUs), coveralls and jumpsuits that are worn during tactical operations and are constructed of fabrics that will not contribute to injuries in the event of exposure to heat, spark, or flash fire. Certified as compliant with NFPA 1975 or NFPA 2112.	Constructed of flame-resistant fabric or 100% cotton. ---------- Station/work uniforms are NOT protective garments or primary protective garments. Station/work garments serve as normal duty/task clothing for personnel that may, in the course of their duties, be exposed to heat, spark or fire and experience thermal injuries. Personal protective equipment (PPE) selected to protect users from the specific hazards associated with a given incident may be worn in conjunction with station/work uniforms. For example, structural firefighting gear and chemical protective clothing are often worn over station/work uniforms.	106, 119, 120
01LE-02-BOOT Boots, Protective, Tactical/Climbing	Boots for tactical operations.	---------- Boots should be selected to meet mission and special considerations such as weather, terrain, etc.	
01LE-02-PRPD Padding, Protective,	General protective pads to provide protection for elbows, knees, neck, →		

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
LE - Tactical Law Enforcement Protective Equipment 02 - Other Items - *Continued*			
Tactical	and shins while conducting tactical law enforcement operations.		
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements			
01SF-01-FTWR Footwear, Structural Fire Fighting Protective, NFPA 1971	NFPA 1971 structural fire fighting protective footwear (certified as compliant with NFPA 1971).	Footwear may be either rubber or leather. Rubber boots use a step-in design, while leather boots can be either step-in or have a gusset with lace or zipper closure option. Other important footwear features include the lining package, type of outer sole, and pull-on loops or tabs. Footwear must include a protective toe cap and puncture resistant plate in the sole. Footwear comes in varying heights, but must be at least 8 inches high when measured from the inside. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. Purchase of ensembles certified as compliant with current NFPA 1971 requirements will be discontinued six months after the effective date of the new edition. Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Footwear should be chosen to be compatible with selected garments such that a complete protective thermal and moisture envelope is provided for the firefighter. Use considerations are provided in →	47, 49, 99, 101, 105

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-GARM Garment, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective garment (certified as compliant with NFPA 1971).	Garments are available in a number of different designs and materials. Garments are generally designed as a coat and pants. The coat may be of standard length with waist high pants, or short with longer bib-style pants. Pants often include suspenders. Different types of closures are used on the front of the coat and in the pants fly to provide overall liquid-tight integrity. Garments must include reflective trim for daytime and nighttime enhanced visibility. Garments are provided with a number of options in pocket placement, types of reinforcements, and other special features for improved wearing comfort and thermal insulation. The garment composite material consists of an outer shell, moisture barrier, and thermal barrier. The industry uses hundreds of combinations of these three layers to achieve different levels of thermal insulation as balanced against comfort and other performance properties. ---------- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. Purchase of ensembles certified as compliant with current NFPA 1971 requirements will be discontinued six months after the effective date of the new edition. Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and →	47, 49, 99, 101, 105

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The garments should be fitted to the individual to provide complete protection in all wearer positions. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-GLOV Gloves, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective gloves (certified as compliant with NFPA 1971).	Gloves consist of a shell and lining. Most glove shells are heat and flame resistant leather, although some gloves use textile materials. The lining may be separate or an integrated moisture barrier and thermal barrier. Moisture barriers may be coated fabrics or laminates that offer some degree of breatheability. Different construction methods are used to make gloves, including the way that the liner is inserted to stay within the glove. Gloves may have a gauntlet or a knit wristlet. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. Purchase of ensembles certified as compliant with current NFPA 1971 requirements will be discontinued six months after the effective date of the new edition. Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective →	47, 49, 99, 101, 105

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		clothing does not protect against chemical agents or toxic industrial chemicals. The type of glove cuff is affected by the wristlet construction used on the protective coat. Gloves should be selected to be compatible with the coat sleeve. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-HLMT Helmet, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective helmet (certified as compliant with NFPA 1971).	Helmets are required to include the minimum components of a shell; an energy absorption system; a retention system; reflective trim; ear covers; and a faceshield, goggles or both. The majority of performance requirements are applied to the complete helmet, including tests for impact/acceleration, physical penetration, heat resistance, flame resistance, electrical resistance, and retention/suspension system performance. Other requirements are applied to individual components, such as the textiles used in ear covers. Differences in helmets relate to the shell material, type of suspension (including the method of size adjustment) and use of an impact cap. Helmets are available in a range of weights and styling (including traditional and modern styles). ---------- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. Purchase of ensembles certified as compliant with current NFPA 1971 requirements will be discontinued six months after the effective date of the new edition. Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective →	47, 49, 99, 101, 105

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. NFPA 1971 permits the use of goggles in place of or supplemental to the helmet faceshield. However, the type of goggles required by the standard must meet a number of requirements that go beyond the specific performance of primary eye protection in the ANSI Z87.1 standard. NFPA 1971 requires that in order for goggles to be part of the helmet, sample goggles must meet test requirements for oven heat resistance, impact resistance, flame resistance and scratch resistance. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-HOOD Hood, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective hood (certified as compliant with NFPA 1971).	The hood is a knit, pull-over clothing interface item intended to protect the wearer's head, face, and neck in areas not protected by the helmet, coat collar, and SCBA facepiece. The hood is designed with a face opening to accommodate the SCBA facepiece and a bib such that the hood stays tucked in under the coat collar when in use. Hoods may be made of different flame and heat resistant materials and may be in single or double layers. Some hoods include a ventilated layer at the top (underneath the helmet) which provides additional comfort for heat loss from the wearer. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. Purchase of ensembles certified as compliant with current NFPA 1971 requirements will be discontinued six months after the effective date of the new edition. Structural fire fighting includes rescue, fire suppression, and property conservation in →	47, 49, 99, 101, 105

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The hood should be selected to be compatible with the coat and other elements of the structural fire fighting protective ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements			
01SH-01-FTWR Footwear, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective footwear (certified as compliant with NFPA 1976).	Proximity fire fighting protective footwear is similar to footwear used for structural fire fighting, except that the footwear materials are designed to offer higher levels of radiant heat protection. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. Proximity fire fighting is a specialized fire fighting operation that can include the →	49, 99, 107

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Footwear should be chosen to be compatible with selected garments such that a complete protective thermal and moisture envelope is provided for the firefighter. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-GARM Garment, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective garment (certified as compliant with NFPA 1976).	Proximity fire fighting protective garments are similar to garments used for structural fire fighting, except that the garment materials are designed to offer higher levels of radiant heat protection. This is accomplished by the use of an aluminized fabric outer shell in place of the conventional textile-based outer shells used for structural fire fighting protective clothing. The aluminized outer shell is evaluated for a number of properties to demonstrate high heat resistance and durability of the reflective surface. Proximity fire fighting protective clothing also does not incorporate trim and other non-reflective materials on the shell outer surface. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. →	49, 99, 107

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The garments should be fit to the individual to provide complete protection in all wearer positions. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-GLOV Gloves, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective gloves (certified as compliant with NFPA 1976).	Proximity fire fighting protective gloves are similar to gloves used for structural fire fighting, except that the materials are designed to offer higher levels of radiant heat protection. Gloves are required to have a highly reflective (aluminized) surface on the back of the hand. The palm is generally leather. Different glove designs are used to achieve this level of performance. Additional lining materials may be included for increased radiant heat insulation. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. Proximity fire fighting is a specialized fire fighting operation that can include the →	49, 99, 107

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The type of glove cuff is affected by the wristlet construction used on the protective coat. Gloves should be selected to be compatible with the coat sleeve. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-HLMT Helmet, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective helmet (certified as compliant with NFPA 1976).	Proximity fire fighting protective helmets are generally structural fire fighting protective helmets that incorporate an aluminized outer shell cover. Proximity helmets may also use a gold Mylar face shield that also affords protection from radiant heat to the face area. ---------- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations →	49, 99, 107

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-SHRD Shroud, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective shroud (certified as compliant with NFPA 1976).	A proximity protective fire fighting shroud is a protective interface component that extends from the helmet to provide protection to the face and neck area not protected by other items. The shroud is constructed of the same three-layer construction provided in the clothing to offer a similar level of radiant heat protection. ---------- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire- →	49, 99, 107

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The shroud should be selected to be compatible with the helmet, coat and other elements of the structural fire fighting protective ensemble. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 02 - Optional Ensemble Elements			
01SH-02-SCBH Cover, SCBA, Protective Radiant Heat	Protective radiant heat cover for SCBA.	Some manufacturers of proximity protective clothing or SCBAs provide a protective cover to protect the SCBA from high levels of radiant heat. In general, aluminized fabrics are used as cover materials and configured for specific SCBAs. The aluminized fabric material should meet the same requirements as the garment outer shell as specified in NFPA 1976, Standard on Protective Ensemble for Proximity Fire Fighting. --- NOTE: The next edition of NFPA 1971 is due to be issued in July 2006. The new edition will modify the requirements for structural fire fighting ensembles, and add an option for a CBRN protective structural fire fighting ensemble. It will also incorporate NFPA 1976 requirements, adding both a proximity fire fighting ensemble and an option for a CBRN protective proximity fire fighting ensemble. Purchase of ensembles certified as compliant with NFPA 1976 requirements will be discontinued six months after the effective date of the new edition of NFPA 1971. The cover should be specific for the type of SCBA being worn.	107
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble			
01SP-01-ENSE	Encapsulating liquid-splash protective ensemble	Liquid splash ensembles consist of a full-body garment, gloves, and footwear. The liquid splash-protective ensemble is either an encapsulating or non-encapsulating ensemble. →	48, 49, 99, 113

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble - *Continued*			
Ensemble, Liquid Splash-Protective, Encapsulating, NFPA 1992	(certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	Encapsulating ensembles enclose the wearer and his or her breathing apparatus; for non-encapsulating ensembles, the face area of the garment is open but the breathing apparatus covers the wearer's face. Both types of ensembles are evaluated with all components in place (garments, gloves, and footwear) for functionality and liquid-tight integrity. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials for garments, gloves, and footwear. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SP-01-ENSN Ensemble, Liquid	Non-encapsulating liquid-splash protective ensemble (certified as compliant to	Liquid splash ensembles consist of a full-body garment, gloves, and footwear. The liquid splash-protective ensemble is either an encapsulating or non-encapsulating ensemble. Encapsulating ensembles enclose the wearer and his or her breathing apparatus; for non- →	48, 49, 99, 113

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble - *Continued*			
Splash-Protective, Non-Encapsulating, NFPA 1992	NFPA 1992). [Note: 2005 Edition is now current.]	encapsulating ensembles, the face area of the garment is open but the breathing apparatus covers the wearer's face. Both types of ensembles are evaluated with all components in place (garments, gloves, and footwear) for functionality and liquid-tight integrity. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials for garments, gloves, and footwear. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing			
01SP-02-FTWR	Liquid-splash protective footwear (certified as	Footwear is an item of clothing or an element of the protective ensemble designed to provide required protection to the foot, ankle, and lower leg. Footwear includes boots or →	48, 49, 99, 113

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing - *Continued*			
Footwear, Liquid Splash-Protective, NFPA 1992	compliant to NFPA 1992). [Note: 2005 Edition is now current.]	outer boots in conjunction with booties. Boots may use different rubber materials and may or may not include a liner. Footwear must be liquid-tight and provide physical hazard resistance against toe impact, cut, puncture, and abrasion. Soles must provide adequate traction. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SP-02-GLOV Gloves, Liquid Splash-Protective, NFPA 1992	Liquid splash-protective gloves (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	Gloves are an element of the liquid splash-protective ensemble or an item of protective clothing designed to provide protection to the hands and wrists. Gloves are generally either supported or unsupported styles with different cuff design and grip finishes. Glove materials must demonstrate resistance to liquid chemical penetration, physical hazard resistance, and adequate hand function (dexterity). --- NFPA 1992 does not address liquid splash protection against chemical warfare agents →	48, 49, 99, 113

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing - *Continued*			
		(CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SP-02-GRMT Garment, Liquid Splash-Protective, NFPA 1992	Liquid splash-protective garment (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	A garment is an element of the liquid splash-protective ensemble or an item of protective clothing designed to provide protection to the upper and lower torso, arms and legs (excluding the head, hands, and feet when garment hoods, gloves, and footwear are not provided). Garments include one or multi-piece splash suits, coveralls, and encapsulating suits. NFPA 1992 further permits both full body and partial body garments. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials which may be coated or special laminates. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or →	48, 49, 99, 113

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing - *Continued*			
		radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements			
01US-01-EYEP Eye/Face Protection, SAR Operations, NFPA 1951	NFPA 1951 USAR Operations eye/face protection (certified as compliant with NFPA 1951).	The intended eye and face protection devices in NFPA 1951 are goggles that meet the requirements in ANSI Z87.1, American National Standard for Occupational and Educational Eye Protection, as well as additional heat and flame resistance requirements provided in NFPA 1951. Goggles may be ventilated or not ventilated. Ventilated goggles may offer either direct or indirect ventilation. The ventilation feature is intended to prevent fogging, but may allow particulate and other substances to enter inside the goggles. Straps are generally adjustable to fit different head sizes. Other types of devices that protect the eye may also be used if all of the requirements of NFPA 1951 are met. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective →	49, 73, 99, 104

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements - *Continued*			
		equipment for wilderness or other non-urban settings. Goggles are principally used in environments where primary eye protection is needed, including but not limited to those where flying debris and particulate may exist. Goggles are not needed if primary eye protection is provided by the full facepiece of a respirator. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01US-01-FTWR Footwear, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective footwear (certified as compliant with NFPA 1951).	Footwear varies in the type of upper, lining, and sole materials. Footwear may be step in or use a combination of zippers, eyelets, and stud hooks with laces. Footwear complying with NFPA 1951 must incorporate a barrier material to prevent the inward leakage of liquids, such as emergency scene chemicals and blood or body fluids. Footwear materials must resist puncture, cut, and abrasion physical hazards. Overall footwear must provide toe impact protection, sole puncture and abrasion protection, and overall traction. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Footwear must specifically be rugged and light weight for long-term wearing applications. Structural fire fighting footwear is typically too heavy for most operations covered by NFPA 1951. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	49, 99, 104
01US-01-GARM Garment, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective garment (certified as compliant with NFPA 1951).	Garments must cover the entire body through the combination of a coat and pants, or coverall. Garment design features will vary with the manufacturer, including the type of closure, reinforcements and pockets. NFPA 1951 requires that garments use reflective trim for high visibility purposes. Garment materials may be one or two layers. Two-layer clothing consists of a shell fabric and lining. Shell fabrics must be flame and heat resistant in →	49, 99, 104

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements - *Continued*			
		addition to being durable and resistant to physical hazards. The lining is a barrier material which is evaluated for liquid chemical and viral penetration resistance. The overall composite must afford a high level of breatheability for long-term wearing comfort. The overall garment must also provide integrity against liquid penetration. ---------- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01US-01-GLOV Gloves, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective gloves (certified as compliant with NFPA 1951).	NFPA 1951-compliant gloves have a rugged exterior and a liner that includes a barrier layer. The gloves are designed to protect against physical hazards, penetration of liquids, and flame and heat contact; however, the gloves offer only limited insulation against high heat sources. Gloves may use a variety of different construction techniques and materials. ---------- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Gloves should be selected to provide a balance of physical, liquid, and heat protection versus hand function for dexterity, grip, and tactility. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	49, 99, 104

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements - *Continued*			
01US-01-HLMT Helmet, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective helmet (certified as compliant with NFPA 1951).	Helmets consist of a shell and a suspension system. Helmets may be either hat style with a full brim, or cap style with no brim. The suspension system uses both a chin strap and a nape device that fits to the back of the head. Helmets may use different shell materials and may or may not include padding. Helmets are evaluated for physical protection (impact and penetration), heat and flame protection, and electrical protection. ---------- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	49, 99, 104
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 01 - Ensembles			
01VF-01-ENSM Ensemble, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective ensemble with optional flash fire protection, including totally encapsulating suit with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-bio-	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. For flash fire protection, suit materials are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. ---------- →	48, 49, 99, 112

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 01 - Ensembles - *Continued*			
	logical protection that was previously optional.]	NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 02 - Required Ensemble Elements			
01VF-02-FTWR Footwear, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective footwear with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must provide a gas-tight interface with the suit. Footwear are evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Footwear are further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). For flash fire protection, footwear is assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Selected footwear must be sized accordingly to fit both the individual and interface properly with the ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Depart- →	48, 49, 99, 112

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 02 - Required Ensemble Elements - *Continued*			
		ment Occupational Safety and Health Program, 2002 Edition.	
01VF-02-GARM Garment, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective garment with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. For flash fire protection, suit materials are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	48, 49, 99, 112
01VF-02-GLOV Gloves, Vapor-Protective, with Optional Flash Fire Protection,	NFPA 1991 vapor-protective gloves with optional flash fire protection (certified as compliant with NFPA 1991 with flash	Gloves are attached to suits as part of an overall ensemble. The gloves may be one or more layers (multiple gloves) with a gas-tight interface with the suit sleeve. Gloves are evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and →	48, 49, 99, 112

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 02 - Required Ensemble Elements - *Continued*			
NFPA 1991	fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	function (dexterity). For flash fire protection, gloves are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for the severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 03 - Suggested Support Items			
01VF-03-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VF-01-ENSM.	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. ---------- Inflation testing equipment should work with the selected NFPA 1991 ensemble.	79
01VF-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01VF-01-ENSM.	Encapsulating suit that is constructed similarly to NFPA 1991 ensemble, but using different materials. Suits will not have same level of integrity or material performance as NFPA 1991 ensemble. ---------- Training suits must never be used in actual operations and must be clearly marked by the user organization to prevent their misuse.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VT - NFPA 1991 Ensembles 01 - Ensembles			
01VT-01-ENSM Ensemble, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective ensemble, including totally encapsulating suit with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	48, 49, 99, 112
VT - NFPA 1991 Ensembles 02 - Required Ensemble Elements			
01VT-02-FTWR Footwear, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective footwear (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must provide a gas-tight interface with the suit. Footwear is evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Footwear is further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. →	48, 49, 99, 112

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VT - NFPA 1991 Ensembles 02 - Required Ensemble Elements - *Continued*			
		NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Selected footwear must be sized accordingly to fit both the individual and interface properly with the ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01VT-02-GARM Garment, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective garment (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	48, 49, 99, 112
01VT-02-GLOV Gloves, Vapor-Protec-	NFPA 1991 vapor-protective gloves (certified as compliant with NFPA	Gloves are attached to suits as part of an overall ensemble. The gloves may be one or more layers (multiple gloves) with a gas-tight interface with the suit sleeve. Gloves are evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resist- →	48, 49, 99, 112

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
VT - NFPA 1991 Ensembles 02 - Required Ensemble Elements - *Continued*			
tive, NFPA 1991	1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	ance against 21 different industrial chemicals and 5 chemical warfare agents. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and function (dexterity). --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for the severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Selected gloves must be attached to the ensemble to provide a gas-tight interface. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
VT - NFPA 1991 Ensembles 03 - Suggested Support Items			
01VT-03-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VT-01-ENSM.	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. --- Inflation testing equipment should work with the selected NFPA 1991 ensemble.	79
01VT-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01VT-01-ENSM.	Encapsulating suit that is constructed in similar manner as NFPA 1991 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1991 ensemble. --- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 01 - Ensembles			
01XD-01-BSUT Suit, Improvised Explosive Device/Explosive Ordnance Disposal (IED/EOD) Protective Ensemble	Suit to provide protection from fragmentation, blast overpressure, heat and light flash, and flame generated by an Improvised Explosive Device (IED), explosives, or Unexploded Ordnance (UXO).	This type of protective ensemble is a whole body protective outfit that can be rapidly donned and doffed. The protective ensemble must allow the wearer adequate situational awareness, mobility and comfort when conducting reconnaissance, render safe, or disruption procedures involving an explosive threat device. These types of protective ensembles can offer limited chemical and biological threat protection depending on specific manufacturer designs. --- This type of protective ensemble is not specifically designed to provide protection to the wearer from chemical, biological or radiological threats. However, this ensemble can be worn with protective ensembles designed for these type of threat hazards. Bomb disposal technicians wearing these types of protective ensembles can be subjected to the physiological effects of heat stress. Commercial personal cooling systems are sold as accessory components to these type of ensembles. Additional ensemble may be needed for chemical/biological protection (see NFPA 1994, Class 1, 2, or 3 ensembles) For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	97
01XD-01-RCON Ensemble, Reconnaissance, Improvised Explosive Device/Explosive Ordnance Disposal (IED/EOD)	IED/EOD protective ensemble intended to protect the head and torso from explosive fragmentation and flame. Include ballistic helmet, ballistic face shield, and ballistic vest.	Should be constructed with flame-resistant and fire-retardant materials. Protection up to .30 caliber / 7.62mm threat rounds to include armor-piercing. --- Refer to NIJ Guide 100-98, Selection and Application Guide to Personal Body Armor for appropriate selection and use of body armor. 100% protection from ballistic threats in all circumstances is impossible. Body armor selection is, to some extent, a tradeoff between ballistic protection and wearability. The selection of appropriate threat levels is important to ensure that wearers have an adequate level of ballistic threat protection for the environment in which they operate. The NIJ standard identifies protection classifications as Type I, IIA, II, IIIA, III and IV. These protection classifications cover threats from hand guns to →	123, 126

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 01 - Ensembles - *Continued*			
		rifles, including armor piercing rounds. Manufacturer instructions related to the care of the outer shell vest (carrier) must be followed.	
01XD-01-SRCH Suit, "Search", Improvised Explosive Device/ Explosive Ordnance Disposal (IED/EOD) Protective Ensemble	Suit to provide protection from fragmentation blast overpressure, heat and light flash, and flame generated by an IED. Suit to be worn in an IED search and location function or with chemical / biological or respiratory protection equipment.	This type of protective ensemble is a whole body protective outfit that can be rapidly donned and doffed. The protective ensemble must allow the wearer adequate situational awareness, mobility and comfort when conducting reconnaissance, render safe, or disruption procedures involving an explosive threat device. --- This type of protective ensemble is not specifically designed to provide protection to the wearer from chemical, biological or radiological threats. However, this ensemble can be worn with protective ensembles designed for these type of threat hazards. Bomb disposal technicians wearing these types of protective ensembles can be subjected to the physiological effects of heat stress. Commercial personal cooling systems are sold as accessory components to these type of ensembles. Additional ensemble may be needed for chemical/biological protection (see NFPA 1994, Class 1, 2, or 3 ensembles) For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
XD - Explosive Ordnance Disposal 02 - Elements			
01XD-02-BOOT Boot, IED/EOD	Heavy-duty, non-static producing footwear for use with IED/EOD ensembles.	Leather preferred, with non-skid soles. Must be non-static producing. --- Compatibility with ensemble.	
01XD-02-CLTH Clothing, Operational,	IED/EOD protective outer clothing used in conjunction with recon ensemble	Clothing gear should be constructed with flame-resistant and fire-retardant materials. --- Use only with known minimum threat. →	97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 02 - Elements - *Continued*			
and Specialized/Protective Gear IED/EOD	or in lieu of full protective ensemble for known minimum threat situation.		
01XD-02-HAND Equipment, Hand Protection, IED/EOD	Hand protection component to IED/EOD protective ensemble system; protective gloves and ballistic hand covers.	Protective handwear should be constructed with flame-resistant and fire-retardant materials, but still allow adequate hand dexterity for the wearer to allow explosive device mitigation and disposal operations. --- Compatibility with ensemble. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
01XD-02-HLMT Equipment, Head and Face Protection, IED/EOD	Helmet Protective System Component to IED/EOD Protective Ensemble System, forced air system. Includes ballistic helmet and face shield compatible with bomb suit or search suit above.	The protective helmet component provides an easily adjustable, comfortable helmet retention and suspension system that provides maximum stability and retention while facilitating removal during doffing. A washable, flame resistant head cover such a balaclava should be provided and used with this protective helmet component. The helmet must provide adequate protection against fragmentation and ballistic threats to the neck, head and face. The helmet must also provide appropriate protection against impact from the ground or other stationary objects. --- For operations in a chemical or biological contaminated environment, IED/EOD protective helmet systems can be procured with integrated inhalation protection. These types of helmets can also be used with NIOSH-CBRN certified respiratory protective equipment to provide inhalation protection in the event of a chemical, biological or radiological threat release. Integrated communications (radio) systems are available from manufacturers and vendors. Performance criteria and standards are currently being developed by NIJ and DHS →	97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number/Title	Description	Features/Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 02 - Elements - *Continued*			
		under the management oversight of NIST- Office for Law Enforcement Standards (OLES) with technical support from Army Natick Soldier Center. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
ZA - PPE Accessories 01 - Personal Alert Safety Systems			
01ZA-01-OAPT System, Operations Area Personnel Tracking and Accountability	Operations area personnel tracking and accountability systems	---------- Training may be required for operators.	
01ZA-01-PASS System, Personal Alert Safety (PASS)	PASS Device - Personal Alert Safety System (certified as compliant with NFPA 1982).	Personal Alert Safety Systems (PASS) provide an alarm whenever the wearer is motionless for 30 seconds or more. PASS provide audible alarms to aid in the location of a downed firefighter or first responder. These devices are built to be relatively small, rugged, and resistant to extreme physical or environmental conditions. PASS may be either separate or integrated into SCBA. All PASS are required to be automatically activated when used. ---------- PASS should be mounted such that the alarm signal will not be muffled if not part of the SCBA, and such that the device does not interfere with the wearing of other ensemble items. For use, see NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	99, 109

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 02 - Gloves & Footwear			
01ZA-02-FTWC Covers, Outer Footwear	Disposable outer footwear covers for contamination hazard protection (no standard currently applies for this item).	Footwear covers are rubber, textile, or plastic-based materials that are shaped into a cover that can be worn over boots. Footwear covers are intended to provide additional protection from contamination and, consequently, are disposable after use. --- Footwear covers should not interfere with ensemble wearing. The wear surface of the footwear cover should provide some level of traction to prevent slipping. The footwear cover design should not allow penetration of liquids in through the top of the cover. Consequently, the footwear cover should be worn on the ensemble in a fashion that will prevent any liquid entry at the top.	
01ZA-02-GLIC Gloves, Inner, Cotton	Inner cotton gloves (no standard currently applies for this item).	Knit cotton gloves worn under ensemble gloves for increased comfort. Gloves may be one-piece or formed from multiple pieces. --- Gloves should fit intimately onto wearer's hands. Gloves must be 100% cotton and be relatively lightweight to prevent loss of hand function when worn with other gloves.	
01ZA-02-GLOD Gloves, Outer, Disposable	Outer disposable gloves for contamination protection (marked in accordance with ANSI/ISEA 105).	Gloves may use a variety of different materials, are provided in different lengths and sizes, and include other features such as grip finishes and cuff end designs. Typical outer disposable gloves for NFPA 1994 ensembles are heavy rubber gloves that offer some additional permeation and physical hazard resistance. --- Unsupported gloves should be used which provide a performance level of 2 for cut, puncture and abrasion resistance per ANSI/ISEA 105. Supported gloves should be avoided as fabric inserts will absorb chemicals. These gloves should also be free from holes as required in ANSI/ISEA 105. Gloves should be sized to fit over existing ensemble glove system with minimum of bulk to prevent loss of hand function. If rugged physical environment is involved, work gloves should be used in lieu of disposable outer gloves. Use gloves in accordance with OSHA 29 CFR 1910.138.	52, 76

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 02 - Gloves & Footwear - *Continued*			
01ZA-02-GLOW Gloves, Outer, Work	Outer work gloves for physical hazard protection (marked in accordance with ANSI/ISEA 105).	Outer work gloves are made of materials that provide a relatively high degree of physical hazard resistance. Gloves are available in a variety of materials, construction styles, and cuff styles. --- Work gloves should provide a performance level of 3 for cut, puncture and abrasion resistance per ANSI/ISEA 105. Gloves should be sized to fit over existing ensemble glove system with minimum of bulk to prevent loss of hand function. Use gloves in accordance with OSHA 29 CFR 1910.138.	52, 76
01ZA-02-GLVA Gloves, Protective, Abrasion/Puncture-Resistant	Abrasion/puncture-resistant gloves provide protection to the fingers and hands from sharp implements, needle sticks, and abrasive surfaces while providing the wearer with the necessary dexterity to fulfill mission requirements.	Gloves should provide a performance level of 3 for cut, puncture and abrasion resistance per ANSI/ISEA 105.	52, 76
01ZA-02-GLVF Gloves, Protective, Fire-resistant	Fire-resistant gloves provide the wearer's fingers, hands, and wrists with protection from flash fires and short duration exposure to high heat, while still providing the wearer with sufficient dexterity to meet mission requirements.	Gloves should meet fire resistance requirements of ANSI/ISEA 105. --- Not for use in handling hazardous materials.	52, 76

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 03 - Eye Protection			
01ZA-03-EYEP Protection, Eye	Eye protection for field operations.	Personnel should have both shaded and clear lenses for day/night operations.	73
ZA - PPE Accessories 04 - Hearing Protection			
01ZA-04-HEAR Protection, Hearing	Hearing protection for operations in potentially high noise environments.	Insert or muff style protection. --- Check Noise Reduction Rating (NRR) for the particular intended use. Generally, ear muffs provide a higher degree of protection than inserts. In high noise areas, both may be worn.	
ZA - PPE Accessories 05 - Undergarments			
01ZA-05-UNDR Undergarment, Non-Flame-Resistant	Non-flame-resistant undergarment for contamination control during doffing, and comfort (no standard currently applies for this item).	Undergarment(s) worn underneath garments will generally be constructed of a non-flame-resistant material with various options for sleeve ends (cut or elasticized), pant cuffs (cut, elasticized, or bootie feet), front closure (zipper or tape or combination), and hood design (open, drawstring, or elasticized). --- The selected undergarment(s) should be relatively lightweight and not restrict movement. They should be sized for a relatively close fit with the individual to prevent interference with wearing of the ensemble.	
01ZA-05-UNFR Undergarment, Flame-Resistant	Flame-resistant undergarment (certified as compliant with NFPA 2112 or the flame-resistant option of NFPA 1975).	Garments are constructed of intrinsically flame-resistant or flame-retardant treated materials of varying weights. Garment designs may include coveralls, or shirt and pant outfits with variations in specific styling features. --- The selected coverall or pants and shirt should be relatively lightweight and not restrict movement. They should be sized for a relatively close fit with the individual to prevent interference with wearing of the ensemble. Use undergarments as specified in NFPA →	99, 106, 119, 120

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 05 - Undergarments - *Continued*			
		1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, care, use, and maintenance of garments per NFPA 2113, Standard for Selection, Care, Use, and Maintenance of Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2001 Edition.	
ZA - PPE Accessories 06 - Other Accessories			
01ZA-06-COOL Garment/Vest/Device, Cooling	Cooling garment, vest, or device (no standard currently applies for this item).	Cooling garments may be active or passive, and involve a range of different technologies. Typical designs include vests and garments, though other types of devices such as vortex tubes and umbilical airlines can be used. Passive devices (such as "ice" vests) provide cooling without the ability for user adjustment. Active devices usually involve some form of circulating fluid or air, which may require a power source and peripheral equipment for operation. Devices differ in their cooling capacity, weight, bulk, complexity, operating conditions, and effectiveness. ---------- The efficiency and effectiveness of personal cooling devices are greatly influenced by the type of protective clothing being worn by the user. The effectiveness of a cooling garment worn under a non-permeable, vapor-tight protective ensemble is greatly reduced. The work rate of the user can also reduce effectiveness. Testing has shown that the efficacy of cooling garments is dramatically reduced at high metabolic work rates. Tradeoffs exist between the additional weight and burden of cooling device versus its cooling performance. Some devices may add complexity to donning efficiency. The effectiveness of the device will vary with the type of technology used for cooling. There are advantages and disadvantages to each type of device. The selected device should work without interfering with the wearing of the selected ensemble, and without creating integrity or protection deficiencies.	82

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 06 - Other Accessories - *Continued*			
01ZA-06-HHAT Hardhat	Hardhat (certified as compliant to ANSI 89.1)	Hardhat consists of shell with suspension; the suspension generally consists of a chin strap or nape strap (worn behind the head) or both. Some hardhats may contain padding for additional impact protection. ---------- Minimum hardhat should be a Class G (general). Hardhat is worn inside encapsulating suit for head protection. Selected suit must accommodate hardhat; the hardhat should not interfere with head movement or wearing of SCBA. Use of head protection should be in accordance with OSHA 29 CFR 1910.135.	51, 74
01ZA-06-HYDR Hydration System, Personal	Personal hydration system	---------- Some systems are not compatible with APRs. If these devices are going to be used as integrated item with respiratory protective equipment then the device must have been included in the NIOSH approval. Organizations should consult with the NIOSH Approved Equipment List for the CBRN SCBA or CBRN APR. Sanitizing and care of these items must be carried out in accordance with the manufacturer recommendations.	
01ZA-06-PRPD Padding, Protective	General protective pads to provide protection for elbows, knees, neck, and shins while conducting operations, including rescue operations.		
01ZA-06-VEST Vest or Outer Garment, High visibility	High visibility vest or outer garment, (certified as compliant with ANSI/ISEA 107)	ANSI/ISEA 107 specifies three different visibility classes of apparel based on the intended use and activity of the wearer. Class 1 is the lowest class, Class 3 is the highest. Differences in the classes are based on the relative amount of background (fluorescent) and retroreflective materials. Fluorescent materials are intended for daytime visibility, while retroreflective materials provide enhancement of wearer visibility at nighttime. ANSI/ISEA 107 →	77

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Item Number/Title	Description	Features/Operating Considerations	Standards[1]
ZA - PPE Accessories 06 - Other Accessories - *Continued*			
		specifies design requirements for the placement of reflective materials on clothing items. Fluorescent materials may be yellow-green, orange-red, or red. --- If worn, an outer high visibility garment or vest should be selected so as to not interfere with the wearing of the ensemble. The appropriate class of high visibility garment should be chosen based on the guidance provided in Appendix B of ANSI/ISEA 107.	
ZP - Ancillary Equipment 00 - Miscellaneous			
01ZP-00-GBAG Bag/Box, Ensemble Gear Storage	Ensemble gear storage bag or box (no standard currently applies for this item).	Soft or hard container capable of holding ensemble and related equipment. --- Bag or box should be sufficiently large to prevent compression and overstuffing of equipment. Bag or box should also be free of sharp edges or rough surfaces that could damage ensemble materials.	
01ZP-00-STOL Stool/Table, Portable or Foldable	Backless stool or table, for use in donning/doffing protective equipment/garments.	Some stools or tables can be folded for portability. --- Should be very sturdy and set on flat, even surface.	

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